MARSHALL STAR

Marshall Space Flight Center — March 22, 2001

'We bring people to space — We bring space to people'

Inside the Star

Marshall engineers use expertise on Space Station life support systems

by Debra Valine

Marshall Center engineers applied their 13 years of experience last month to ensure the environmental control and life support systems inside The Boeing Company-built Destiny research lab were functioning properly before astronauts entered the lab.

A problem with the carbon dioxide removal system was detected, but with the expertise and facilities available for troubleshooting at the Marshall Center, the problem was quickly identified and engineers are working to resolve it.

"Upon activation of the systems on Destiny, all major environmental control and life support systems and subsystems performed flawlessly with the exception of the carbon dioxide removal assembly," said Jay Perry, the NASA Atmosphere Revitalization Subsystem engineer in the Flight Projects Directorate's ECLSS Group.

Jim Knox, the NASA Carbon Dioxide Removal Assembly engineer, has been participating in troubleshooting efforts with Boeing and Honeywell engineers since the Carbon Dioxide Removal

*See **Support** on page 5*

Marshall's X-37 program passes first milestone

by Debra Valine

Last week, NASA and its industry partner The Boeing Company, conducted the first in a series of up to seven planned free flight tests of the X-40A experimental vehicle, part of the Marshall-managed X-37 program.

The vehicle successfully accomplished a 74-second free flight at Dryden Flight Research Center at Edwards Air Force Base in California.

"It is a big morale boost for the entire team to watch this X-vehicle fly," said U.S. Air Force Lt. Col. Kris Johanessen, deputy manager for the X-37 program at Marshall. "Everybody here at Marshall is enthusiastic about the test and what the future holds for the X-37."

"Patience and persistence pays off," said Marshall Center Director Art Stephenson, of the successful test.

"The test results validated our simulation models extremely well," Johanessen said. "We look forward to the next series of tests. We expect the next free flight test to be in early April."

The engineless X-40A was carried to 15,000 feet above ground level by an Army CH-47D Chinook helicopter and released. The X-40A is an 85 percent scale version of NASA's X-37 technology demonstrator, a robotic space plane capable of reentering the atmosphere and landing on its own. It is intended to demonstrate

*See **X-37** on page 2*

Dryden photo

The X-40A immediately after release from its harness, suspended from a helicopter 15,000 feet above Dryden Flight Research Center, Calif.

Photo by Emmett Given, NASA/Marshall Space Flight Center

Space Station program manager visits Marshall

Tommy Holloway, third from right, the International Space Station program manager, signs the ISS vision banner during his visit to the Marshall Center Wednesday. Others signing the banner are, from left, Volker Roth; Ann Whitaker, acting director of Marshall's Science Directorate; Celia Lang, of Lockheed Martin Corp.; Jan Davis, director of Marshall's Flight Projects Directorate; Mark Stephenson; and Marshall Center DirectorArt Stephenson.

X-37

Continued from page 1

technologies for future-generation reusable launch vehicles that could reduce the cost of access to space.

"Flying the X-40A gives us an early look at our design while the X-37 is still being fabricated, " said Susan Turner, Marshall's X-37 program manager. "We adapted an existing vehicle to fit our needs as a way to minimize risk to the orbital vehicle. It's a cost-effective way to enhance the likelihood of mission success for X-37."

The flight test was used to validate several technologies planned for use on the X-37 vehicle. This includes the Computed Air Data System, a high fidelity air data system used during orbital reentry; the Space Integrated Global Positioning System Inertial Navigation System, used for guidance, navigation and control, as well as validation of our Flight Operations Command and Control facilities.

The X-40A test vehicle was built by Boeing for the U.S. Air Force, which is lending it to NASA for use in the flight tests. It was flight tested one time in 1998 for the Air Force's Space Maneuver Vehicle Technology Program. Since then, it has received upgraded instruments and telemetry, focused on integrating the unique characteristics of the X-37 design.

"This is the first step in an incremental approach to mission success," Johanessen said. This test was one of up to seven tests using the X-40A that will be conducted during the first of three phases leading up to orbital flight of the X-37. The second phase is atmospheric flight testing of the X-37. The third phase is the orbital flights.

"This test has given us an opportunity to strengthen our flight test team both at Marshall and at Dryden. We have gained invaluable insight into our processes, both good and bad," Turner said. "It is inevitable in any experimental vehicle program to have technical challenges."

Marshall's engineering team played an integral role in resolving many of these issues. "Dan Mitchell, avionics and software lead for the project, played a key role in giving us confidence the vehicle was ready to fly," Turner said. His team spent many long hours with the vehicle out at Edwards Air Force Base, and we appreciate the great effort. "We have the Army, Navy, Air Force and Boeing all teaming with NASA. We have Air Force personnel manning the flight test consoles; we're using Army helicopters. Everyone is working shoulder-to-shoulder to accomplish this."

The X-37 is 27.5 feet long and weighs about 6 tons. Its wingspan is 15.5 feet, and it contains a payload bay 7 feet long and 4 feet in diameter. It is modular in design to allow for rapid insertion of technologies and experiments. The highly reliable AR-2/3 hydrogen peroxide engine will provide on-orbit propulsion.

In partnership with the U.S. Air Force, NASA will test key technologies on the X-37, making it the first reusable, in-space demonstrator. The X-37 demonstrates advanced design and manufacturing processes and structures, as well as thermal protection systems. It can be carried into orbit either by the Shuttle or by an expendable launch vehicle. Current plans call for two orbital flights.

The intent is to move space transportation closer to an airline style of operations with horizontal takeoffs and landings, quick turnaround times and small ground support crews. The target is a 100-fold reduction in the cost of getting to space by 2025, lowering the price tag to $100 per pound. Marshall Center is pushing technologies that will dramatically increase the safety and reliability and reduce the cost of space transportation.

The X-37 government team, led by the Marshall Center, includes NASA's Ames Research Center in Mountain View, Calif.; Johnson Space Flight Center in Houston, Texas; Kennedy Space Center at Cape Canaveral, Fla.; Goddard Space Flight Center in Greenbelt, Md.; Langley Research Center in Hampton, Va.; Dryden Flight Research Center and the Air Force Flight Test Center, both at Edwards Air Force Base in Edwards, Calif.; and the Space and Missile Systems Center and the Air ForceResearch Laboratory in Albuquerque, N.M. Boeing at Seal Beach, Calif, leads the X-37 industry team.

The writer, employed by ASRI, is the Marshall Star editor.

Ask Art Stephenson

Editor's note: *These are some of the questions submitted at the last all-hands meeting. More questions and answers will follow in coming weeks.*

Q: Is there intent/capability to develop in-space manufacturing on the International Space Station?

Stephenson

A: The current plans do not call for actual manufacturing on the Space Station, but the microgravity science community plans later on to make use of rapid prototyping to pursue actually making parts in space through the use of new processing techniques.

This would lead to new science ventures and the utilization of fundamental resources such as soils, metal powders and silicon for hardware construction. There are many possibilities in this area that will give us more fundamental understanding of materials and more efficiency in space exploration.

Q: Is a breakdown of the FY01 NASA budget — by enterprise or major program — available to the employees? Although NASA received the first budget increase in years, it seems like all the programs are hurting for money. Even the 2nd gen government portion was cut.

A: All NASA employees can find current budget information on the NASA Headquarters Code B Web site at: http://www.ifmp.nasa.gov/codeb/budget2001/.

In addition, the Agency Legislative Affairs Office has a Web site that provides a good source of tracking the NASA budget as it makes its way annually through Congressional approval channels. The Web address is: http://www.hq.nasa.gov/congress/

The approved bills and supporting reports are available from this source as well.

Letters

Breast cancer car tags available

Everyone purchases a car tag and many of us purchase vanity tags. Now there is a vanity tag that can do some real good. There is going to be a breast cancer tag available in Alabama if 250 people commit to purchasing one. The fee is the same as for all vanity tags ($50), but the amount goes to the Susan G. Komen Breast Cancer Research Foundation.

Finding 250 people whose lives have been touched by this awful disease wouldn't seem to be hard — the hard part is getting the word out. I purchased my tag in February and even the people at the courthouse were not familiar with what tags were available, so you have to ask and maybe even insist.

There is a Web site that list the tags that are available for precommitment: http://www.ador.state.al.us/, just click on Motor Vehicle at the left bottom, then New Tags at the top right and then Commitments to Purchase. This will show you the tags that are available, and how many people have signed up to purchase them. I am confident that someday soon there will be a cure for all cancer, not just breast cancer, and every dime that can be committed to research will truly speed up the search for that cure.

Sandy H. Brown, RS50

Patton Road resurfacing project to start soon

from the Redstone Rocket

A roadway repair and resurfacing project will begin soon to provide some much-needed maintenance throughout Redstone Arsenal.

Patton Road will be resurfaced from its extreme southern end at Raiford Road to the newly constructed Gate 4.

The work is to be completed in phases. The initial phase will be the section of roadway south of Huntsville Spring Branch. The second phase will be between Gate 4 and Huntsville Spring Branch. Resurfacing also will be done on Gray Road, Ajax Road ATACM Road and the northern end of Patton Road.

Work on south Patton Road should begin this week, and is expected to last several months. The construction procedures will include milling of old pavement and placing bituminous plant mix wearing surface.

Construction on Patton Road between Gate 10 and Gate 4 will be accomplished last.

The National Space Science and Technology Center ribbon cutting/grand opening ceremony will be at 2 p.m. Monday at 320 Sparkman Drive. U.S. Sen. Richard Shelby of Alabama will speak. Everyone is invited.

National Manufacturing Week Expo

Marshall Center technologies featured in Chicago

by Lynnette Madison

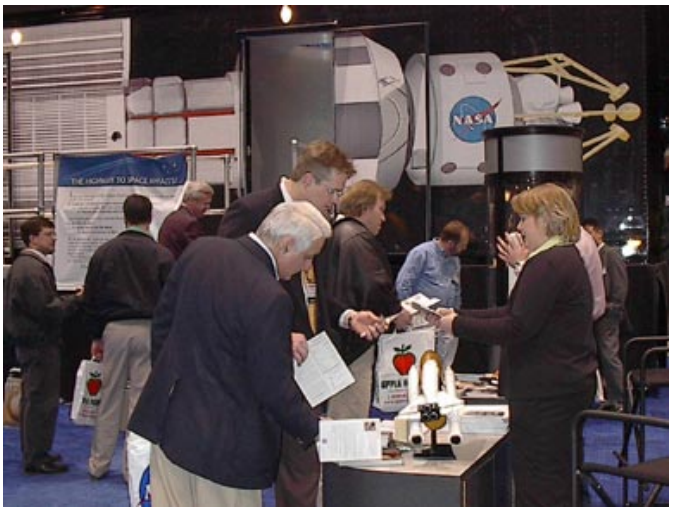
More than 15,000 industry professionals visited Marshall's "Starship 2040" and other displays at the 11th annual National Manufacturing Week Expo in Chicago March 5-8.

Staffed by the Marshall Media Relations Department and Marshall program personnel, the exhibit featured Marshall Space Shuttle Propulsion, Space Product Development and Microgravity Science programs and "Starship 2040" — a mock-up of commercial space flight 40 years in the future.

Space Product Development and Microgravity provided attendees insight into the possibilities of future research and gains likely through commercial space ventures. The Shuttle Propulsion exhibit featured current upgrades that are being implemented to improve safety and included actual hardware. The Starship 2040 experience allowed visitors to imagine a future spacecraft's control, passenger and engineering compartments. The exhibit — presented within a 48-foot tractor and trailer rig — provides insight into technologies that will eventually make such an out-of-this world experience as routine as air travel.

One of the largest trade shows in the world, the four-day National Manufacturing event — this year attended by more than 65,000 — is geared toward industry and trade professionals working in all facets of manufacturing and design.

During the show, the Media Relations Department also conducted an ambitious media campaign in the Chicago area. The department distributed an advisory about Marshall's role in the trade show to more than 100 media outlets. In conjunction with the advisory, the department issued a news release on Space Shuttle Project Manager Alex McCool, who was honored during the event week. The department also followed up the advisory and news release with a telephone campaign to alert Chicago area media about Marshall's upcoming participation in the Expo.



Courtesy photos

Shannon Raleigh, right, Space Shuttle exhibit outreach coordinator, explains Shuttle upgrades to visitors at the National Manufacturing Week Expo in Chicago.

McCool was honored with a Special Achievement Award by Design News, a national engineering publication, and one of the event organizers. He was interviewed by Bloomberg Radio, a syndicated program broadcast nationally to 100 stations, and WBBM, an all-news CBS station in Chicago. The Huntsville Times also interviewed McCool about his award, and published a story.

Marshall's Harold Gerrish, chief laboratory researcher of Propulsion Research Center, and Vernotto McMillan, deputy manager of Marshall's Technology Transfer Department, participated in a two-hour talk show on Chicago's WGN Radio "Extension 720" broadcast. The program has a listening audience of more than 600,000 in the Chicago area and also is heard in 38 states. They discussed how Marshall helps incorporate its technologies into the business and industry arena and Marshall's efforts in "building a highway to space."

Other news media coverage of Marshall's role at the conference included a live news report on WGN-TV and articles in the Chicago Tribune, Chicago Sun Times and the Manufacturing Week Show Daily. Additionally, 25 media representatives visited the Marshall booth and talked to Marshall staffers.

Starship 2040's appearance at the conference and exhibition marks its first stop on a nationwide series of national-level conferences.

The writer, employed by ASRI, supports the Media Relations Department.

Marshall's Harold Gerrish, second from left, and Vernotto McMillan, right, appear on "Experience 720," a popular talk show on WGN-Radio in Chicago hosted by Milt Rosenberg, left. Gerrish and McMillan, along with Dr. Evalyn Gates from Chicago's Adler Planetarium, took part in a recent show highlighting the space program.

Support

Continued from page 1

Assembly failed to start up on Feb. 12. "There is an amazing amount of effort that goes into troubleshooting an on-orbit anomaly," Knox said.

"The Carbon Dioxide Removal Assembly team has been busily working to isolate the problem and develop troubleshooting steps, including testing an identical flight unit at Honeywell in Torrance, Calif. We've made two unsuccessful attempts to overcome foreign object debris that may have stalled the pump via ground commands," Knox said.

"Currently the team is preparing procedures to replace the balky pump with another that was delivered by the 5A.1 crew," he said. "The primary carbon dioxide removal function is provided by the Vozdukh system onboard Zvezda until the Space Station grows to support six to seven crew members. Therefore, there is sufficient time to fully investigate and correct the problem."

Additional functional backup for removing carbon dioxide from the cabin air is also provided by both the Russian and U.S. partners in the form of lithium hydroxide-based scrubbing units similar to those used onboard the Orbiter and the Marshall-managed Spacelab.

"The Marshall role also extends to continually expanding our understanding of the Russian life support equipment," Perry said. We participate in multilateral teams to work problems associated with these systems and provide coordinated technical input to the International Space Station Program concerning their operation and maintenance."

The Marshall Center is responsible for life support systems in the U.S. Segment of the International Space Station that recycle water and clean the air. Rocket Space Corporation Energia manages the life support systems for the Russian Segment.

"The work we have been doing at Marshall developing the ECLSS system is very important to helping maintain a high quality of life for the astronauts living on the International Space Station," said Marshall Center Director Art Stephenson. "Once again, the Marshall team has done an exceptional job. It is very exciting to see our hardware doing its job on Station. The civil servants and contractors should be proud of their hard work."

The ECLSS systems onboard the Space Station reclaim and purify water, generate oxygen, maintain cabin pressure, detect and suppress fires, and condition the atmosphere by controlling the temperature, humidity, carbon dioxide, and gaseous contaminant levels. The primary life support systems onboard Destiny include one rack for the Atmosphere Revitalization Subsystem, the Temperature and Humidity Control System, Fire Detection System and Atmosphere Control and Supply Subsystem.

The Atmosphere Revitalization Subsystem rack not only includes the carbon dioxide removal assembly and the trace contaminant control subassembly, but also a major constituent analyzer. The analyzer is a scanning mass spectrometer that continually collects cabin air samples from Destiny and Unity via a network of stainless steel sampling lines, and analyzes the samples for nitrogen, oxygen and carbon dioxide partial pressures.

"The Atmosphere Control and Supply Subsystem monitors the total cabin pressure and, when the airlock is launched during STS-104, will control the introduction of oxygen and nitrogen into the cabin to replace atmospheric gases lost to leakage and crew metabolism," Perry said. "The oxygen partial pressure measurement is sent to the pressure control assembly for use in its control algorithm."

The life support systems onboard Destiny serve as a functional backup to similar systems housed in Zvezda — the Russian service module. Zvezda does include a water processing system and an oxygen generator. The oxygen generator produces oxygen by electrolyzing water. The functional equivalents to these latter systems are being developed by Marshall for launch onboard Node 3.

"We are responsible for providing the Space Station crew with a comfortable living and working environment, so they can focus their energy on the experiments that will benefit us here on Earth," said Monsi Roman, a microbiologist who has been with the ECLSS program since its inception.

The writer, employed by ASRI, is the Marshall Star editor.

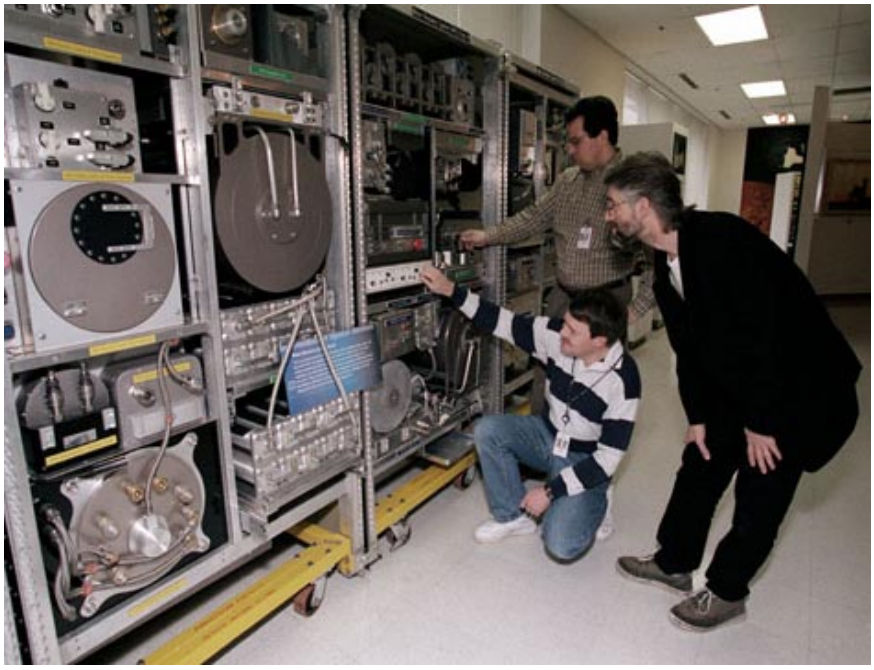


Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Eric J. Show, left, Frank A. Prince, center, and Keith Cornett check out the Environmental Control and Life Support System (ECLSS) racks on display in Marshall's Heritage Gallery, Bldg. 4203.

★ ★ ★
Marshall Stars
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Dr. Ruth Jones honored by local civic club

Dr. Ruth D. Jones, an optical physicist in Marshall's Space Optics manufacturing Technology Center, has been honored by a local civic club recognizing young women who serve as role models for youth.

The "You Go Girl" Award, given annually by the Sui Generis Civic Club of Decatur, acknowledges young women "trying to make a difference in the quality of life for others and who have extraordinary accomplishments."

Jones

Jones is the second African-American woman to receive a doctorate in physics in the state of Alabama, and the first female to receive a bachelor's degree in physics from the University of Arkansas at Pine Bluff.

At Marshall, she investigates new techniques for testing and fabricating optical elements for the Center's microgravity research facilities.

Software of the Year

Marshall seeks nominations for annual competition

from the Chief Counsel's office

Nominations are being accepted for the NASA Software of the Year Award, to give recognition to software developed and owned by NASA.

The award includes a monetary Space Act award of up to $100,000 and a certificate of recognition.

Criteria for award eligibility include that NASA has an intellectual property interest; it has been supported, adopted, sponsored or used by NASA; it is significant to the NASA mission; all experimental phases have been successfully completed to the satisfaction of the customer; and the software has been tested and documented per the requirements of NPD 2820 Section 1(e).

Entries will be judged by the NASA Software Advisory Panel, comprised of software development experts from all NASA Centers and the Jet Propulsion Laboratory. After its review, the panel will submit its selection(s) to the Inventions and Contributions Board.

The NASA Form 1329, Award Evaluation Questionnaire, a summary evaluation document, and letters of endorsement for the software must be enclosed in the nomination package.

Competition guidance, NASA Form 1329, and information about last year's winner are available on the Web at: http://icb.nasa.gov

For more information, call James J. McGroary, Marshall's awards liaison officer, at 544-0013 or Abbie Johnson at 544-0014.

Entries and supporting material must be submitted to McGroary at LS01 no later than April 24.

On-line catalog, SRS make it easier to move Marshall's furniture

The Marshall Center has almost 7,000 personnel on-site who use office and work furniture. A conservative estimate of nine pieces of furniture per person totals 63,000 pieces of furniture.

About one-third of these personnel will change locations in any given year, resulting in the movement of approximately 20,000 pieces of furniture.

Until now, e-mails, paper forms, voice mails, sticky notes and word-of-mouth requests were used to ensure these moves happened. Receiving multiple types of requests made it difficult to ensure all the necessary information was obtained and properly scheduled.

A better way has been created, as outlined in MWI 4220.1, using the available electronic Service Request System (SRS) as the official request mechanism for moves and relocations.

Now every Center employee can go to the Web at: http://srs.msfc.nasa.gov/catalog/bin/home.asp or on "Inside Marshall" under the One Stop Shop tab. and fill out an electronic request form for move and relocation services. SRS will require the approval of a department manager before the request is "assigned to work." Customers will be notified by e-mail with a service work order number that can be accessed anytime to status the request until completion. Customers should save the e-mail.

Combined with this request capability, the Center Operations Directorate is creating an on-line catalog — targeted for release in April — where authorized furniture items can be viewed. Pictures of furniture items can be viewed in the catalog before, or in lieu of, visiting the ergonomic set-up display in Bldg. 4471, room A106B.

The display is available for viewing.

Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Edwin Jones wins Space Flight Awareness Leadership Award

Edwin Jones, second from left, deputy manager of Marshall's Facilities Office, receives the Space Flight Awareness Leadership Award at the launch of Discovery March 8. With him, from left, are Marshall Center Director Art Stephenson; his wife, Mary Jones; and astronaut Janice Voss.

Deepest X-rays ever reveal abundance of black holes

For the first time, astronomers believe they have proof black holes of all sizes once ruled the universe. The Marshall-managed Chandra X-ray Observatory provided the deepest X-ray images ever recorded, and those pictures deliver a novel look at the past 12 billion years of black holes.

Two independent teams of astronomers last week presented images that contain the faintest X-ray sources ever detected, which include an abundance of active super-massive black holes.

"The Chandra data show us that giant black holes were much more active in the past than at present," said Riccardo Giacconi, of Johns Hopkins University in Baltimore, Md., and Associated Universities Inc. in Washington, D.C. The exposure is known as "Chandra Deep Field South" since it is located in the Southern Hemisphere constellation of Fornax. "In this million-second image, we also detect relatively faint X-ray emission from galaxies, groups and clusters of galaxies."

"For the first time, we are able to use X-rays to look back to a time when normal galaxies were several billion years younger," said Ann Hornschemeier, Pennsylvania State University in University Park. The group's 500,000-second exposure included the Hubble Deep Field North, allowing scientists the opportunity to combine the power of Chandra and the Hubble Space Telescope, two of NASA's Great Observatories. The Penn State team recently acquired an additional 500,000 seconds of data, creating another one-million-second Chandra Deep Field, located in the constellation of Ursa Major.

For more information, visit the Web at:
http://chandra.harvard.edu

This is National Poison Prevention Week

Kids act fast and so do poisons. Young children may put anything in their mouths — this is part of learning. Many household products can be poisonous if swallowed, if in contact with the skin or eyes, or if inhaled.

Common Examples:
MEDICINES: Aspirin, tranquilizers, sleeping pills and iron pills.
HOUSEHOLD PRODUCTS: Mothballs, furniture polish, drain cleaners, weed killers, insect or rat poisons, lye, paint thinners, bleach and cosmetics.

Safety Rules:
Keep harmful products out of your child's sight and reach.
Take extra care during stressful times.
Never call medicine "candy."
Buy medicine and household products in childproof packages.
Always replace the safety caps immediately after use.
Never leave alcohol within a child's reach.
Seek help if your child swallows a substance that is not food. Call the Poison Center or your doctor. Keep these telephone numbers by your phone:

DOCTOR:
POISON CONTROL CENTER: 1-800-462-0800 (Ala. only)

Keep products in their containers. Never put inedible products in food or drink containers.

- Read labels with care before using any product.
- Teach children not to drink or eat anything unless an adult gives it.
- Do not take medicine in front of small children. Children tend to copy adult behavior.
- Check your home often for old medications or substances and discard them.
- Be alert for repeated poisonings. Children who swallow a poison are likely to try again within a year.

Galileo spacecraft gets one last frequent-flyer upgrade

NASA release

The resilient Galileo spacecraft doesn't know when it call it quits. So, NASA has outlined the details of one last mission extension, which includes five more flybys of the Jovian moons before a final plunge into the crushing pressure of the giant planet's atmosphere.

Galileo has been orbiting Jupiter for more than five years and survived radiation exposure more than three times what it was built to withstand. Galileo's mission has previously been extended twice and during that time it has returned an enormous wealth of scientific information, including evidence of a sub-surface ocean on Jupiter's moon Europa.

"We're proud that this workhorse of a spacecraft has kept performing well enough that we can ask it to keep serving science a little longer," said Dr. Jay Bergstralh, acting director of Solar System Exploration at NASA Headquarters in Washington, D.C.

On May 25, Galileo should pass about 123 kilometers (76 miles) above the moon Callisto, the second largest of Jupiter's 28 known moons. The effects of Callisto's gravity will set up the space probe for a swing over both polar regions of the intensely volcanic moon Io in August and October.

The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages Galileo for NASA..

More information about Galileo is available on the Internet at: *http://galileo.jpl.nasa.gov/*

Moonbuggy Race April 6-7
Record number of teams competing

Students from across North America will be coming to Huntsville to compete in the 8th annual Great Moonbuggy Race at the U.S. Space & Rocket Center April 6-7.

It's an event that has special ties to America's space program and this year more than 50 teams — representing colleges and high schools from 20 states and Puerto Rico — will roll into Huntsville.

Pittsburg, Kan., High School wins its division in 2000

And for the student teams, it is a test of their design and engineering skills as well as their physical endurance.

The Great Moonbuggy Race is inspired by development of the first lunar roving vehicle, designed and tested at the Marshall Center. The race challenges students to design and build a human-powered vehicle to address engineering problems similar to those faced by the original Marshall Center lunar rover development team.

As part of the challenge, students must design a vehicle, that, unassembled prior to the race, occupies a space no more than 4 feet high, 4 feet wide and 4 feet long. During the race, each vehicle is powered by one male and one female over a half-mile obstacle course of simulated moonscape terrain.

The Customer and Employee Relations Directorate of the Marshall Center, the U.S. Space & Rocket Center, the American Institute of Aeronautics and Astronautics and the Alabama Aerospace Teachers Association sponsor the annual event.

For more information, visit the Web at: *http://moonbuggy.msfc.nasa.gov*

Redstone renaming housing areas to reflect space connection

by Sandy Riebeling

Soon there will be signs popping up in the Redstone Arsenal housing areas bearing the new space age names of the neighborhoods on post.

"The whole idea of naming the housing areas is to make them sound more like civilian subdivisions instead of firing ranges," said Jennifer Kennedy, mayor of Endeavour Village — formerly known as housing area 8. "It's another way to bring the community together and help us get to know each other."

Neighborhood naming is just one of many efforts boosted by the newly adopted Mayor's Program on the Arsenal. Since calling for volunteers to serve as mayors back in September, post residents have stepped up to serve. Military spouses and active duty soldiers have taken on mayoral and vice mayoral duties in seven of the eight housing areas.

Mayors played an active role in naming of the neighborhoods by researching names with a space theme, and then polling residents on their favorite. Area 1 is now Columbia Centre; area 2 Challenger Heights; area 3 Saturn Pointe; area 5 Freedom Landing; area 8 Endeavour Village; Area 10a Apollo Landing and Area 10b Pathfinder Pointe.

Maj. Gen. Al Sullivan, commanding general of U.S. Army Aviation and Missile Command, "chose the space theme to highlight the Army's early contributions to the space program, and gave final approval to the names," Ryan said. "We already have streets named after Army systems. It also fits in with Huntsville's space image."

The writer works for the Redstone Rocket.

Heading for Mars

2001 Mars Odyssey set to find out what planet is made of

NASA release

NASA announced Monday that it will launch the 2001 Mars Odyssey in April to explore the fourth planet from the Sun, it will carry a suite of scientific instruments designed to tell us what makes up the Martian surface, and provide vital information about potential radiation hazards for future human explorers.

"The launch of 2001 Mars Odyssey represents a milestone in our exploration of Mars — the first launch in our restructured Mars Exploration Program we announced last October," said Dr. Ed Weiler, associate administrator for Space Science at NASA Headquarters in Washington, D.C.

Set for launch April 7 from Cape Canaveral Air Force Station in Florida, Odyssey is NASA's first mission to Mars since the loss of two spacecraft in 1999. Other than our Moon, Mars has attracted more spacecraft exploration attempts than any other object in the solar system, and no other planet has proved as daunting to success. Of the 30 missions sent to Mars by three countries over 40 years, fewer than one-third has been successful.

The Odyssey team conducted vigorous reviews and incorporated "lessons learned" in the mission plan. "The project team has looked at the people, processes, and design to understand and reduce our mission risk," said George Pace, 2001 Mars Odyssey project manager at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "We haven't been satisfied with just fixing the problems from the previous missions. We've been trying to anticipate and prevent other things that could jeopardize the success of the mission."

See related story on page 10

Odyssey is part of NASA's Mars Exploration Program, a long-term robotic exploration initiative launched in 1996 with Mars Pathfinder and Mars Global Surveyor. "The scientific trajectory of the restructured Mars Exploration Program begins a new era of reconnaissance with the Mars Odyssey orbiter," said Dr. Jim Garvin, lead scientist for NASA's Mars Exploration Program. "Odyssey will help identify and ultimately target those places on Mars where future rovers and landers must visit to unravel the mysteries of the Red Planet."

NASA's latest explorer carries three scientific instruments to map the chemical and mineralogical makeup of Mars: a thermal-emission imaging system, a gamma-ray spectrometer and a Martian radiation environment experiment. The imaging system will map the planet with high-resolution thermal images and give scientists an increased level of detail to help them understand how the mineralogy of the planet relates to the landforms. The part of Odyssey's imaging system that takes pictures in visible light will see objects with a clarity that fills the gaps between the Viking orbiter cameras of the 1970s and today's high-resolution images from Mars Global Surveyor.

The Jet Propulsion Laboratory in Pasadena, Calif., manages the 2001 Mars Odyssey mission for NASA's Office of Space Science, in Washington, D.C. Principal investigators at Arizona State University, the University of Arizona and NASA's Johnson Space Center will operate the science instruments. Lockheed Martin Astronautics in Denver, Colo., is the prime contractor for the project, and developed and built the orbiter. Mission operations will be conducted jointly from the Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, and Lockheed Martin.

STS-97 crew visits Wednesday

American crew members of Space Shuttle mission STS-97, Commander Brent Jett, pilot Michael Bloomfield, and mission specialists Joseph Tanner and Carlos Noriega, will present mission highlights from 10:45-11:45 a.m. Wednesday in Morris Auditorium. Everyone is invited. Attendees are asked to be seated by 10:30 a.m. The astronauts also will present Silver Snoopy Awards to Marshall team members for their contributions to the space program.

Russian scientists use Marshall's BATSE data for upcoming experiment going to Mars

by Debra Valine

When the 2001 Mars Odyssey mission launches in April, Russian scientists will have the High Energy Neutron Detector (HEND) experiment onboard that will look for water on Mars. In addition to exploration of Mars, the experiment also will continue astrophysical research conducted by the Marshall Burst and Transient Source Experiment (BATSE) that flew on the Compton Gamma Ray Observatory for nine years.

Mars Odyssey, a program managed by the Jet Propulsion Laboratory in Pasadena, Calif., will survey the surface of Mars from orbit to better understand the planet's elementary composition.

HEND is part of the gamma-ray spectrometer facility on this mission, which is led by Dr. William Boynton from the University of Arizona in Tucson.

Russian principal investigator of HEND Dr. Igor Mitrofanov, the head of the gamma-ray spectroscopy laboratory at the Space Research Institute (IKI) in Moscow, and his colleagues Drs. Dmitry Anfimov and Maxim Litvak, senior research scientists, also will use data gathered by BATSE as a baseline for continued research on the mysterious gamma-ray bursts.

The trio recently spent two weeks at the Marshall Center with members of the gamma-ray astronomy team, led by Dr. Gerald Fishman, Marshall's chief scientist for gamma-ray astronomy in the new National Space Science and Technology Center on Sparkman Drive. Their experiment is part of the U.S.-Russian Program of Mars Exploration.

"BATSE helped define our experiment performance for better capability for detection of gamma-ray bursts," Mitrofanov said. "Because of data gathered by BATSE, we already know what parameters to use for optimal detection of these transients in gamma rays."

Though the primary experiment HEND is designed to detect high energy neutron albedo of water on or just below the surface of Mars, on its journey to Mars, it will be able to detect gamma-ray bursts. Variations of neutron albedo could point out the subsurface water-ice regions. So, performing the "primary" work of looking for Martian water, Mitrofanov also gets to do what he calls his "lovable" work — his passion is gamma-ray bursts.

"We work cooperatively because only one experiment will not give us the answers to our questions," said Mitrofanov, whose team has been conducting joint scientific research with the BATSE team at Marshall for more than five years.

"BATSE has the largest collection of gamma-ray burst data, and it is the basis for every future gamma-ray experiment," he said. "When we get information from another experiment, we have to compare it with the data that was collected by BATSE."

Gamma-ray bursts are among the greatest mysteries of astrophysics. "They are the largest known explosions in the universe," Fishman said. "They completely dominate the sky when they explode. They vary in duration and in location."

BATSE launched on the Compton Gamma-Ray Observatory in 1991. For nearly nine years, BATSE kept unblinking watch on the universe to alert scientists to the invisible, mysterious gamma-ray bursts that had puzzled them for decades.

By studying gamma rays from objects like black holes, pulsars, quasars, neutron stars and other exotic objects, scientists can discover clues to the birth, evolution and death of stars, galaxies and the universe.

In March 1999, NASA decided to return the Compton Gamma-Ray Observatory — and BATSE — to Earth's atmosphere for safety reasons after one of three on-board gyroscopes used to control the orbiting observatory malfunctioned.

The writer, employed by ASRI, is the Marshall Star editor.

Photo by Terry Leibold, NASA/Marshall Space Flight Center

From left, Dimitry Anfimov, Gerald Fishman, Igor Mitrofanov and Maxim Litvak review gamma-ray burst data gathered by Marshall's Burst and Transient Source Experiment (BATSE).

Spot an environmentalist

The "Spot-an-Environmentalist" activity encourages Marshall employees and on-site contractors to keep Marshall environmentally friendly and rewards them. Submit an employee's name and a short justification of the deed via e-mail to lucy.boger@msfc.nasa.gov or mail to AD21, Bldg. 4250, room 16B, no later than March 30. Winners will receive a Wild Birds Unlimited gift certificate to be presented at the Earth Day tree planting ceremony at 10 a.m., April 19, on the north side of Bldg. 4619. In case of inclement weather, Earth Day activities will be held in Morris Auditorium, same date and time.

Students need housing

Approximately 25 students in the Undergraduate Student Research Program, and 20 students working in the Equal Opportunity Office, will be at Marshall for a 10-week period this summer. The interns will require housing from June 4-Aug. 10. If any employee has a room or space in their home as well as transportation to and from Marshall for the summer interns, please send an e-mail to Julie Mills or Chanel Vaughan-Leslie. Include your name, the rent, conditions and/or preferences.

Blue Cross/Blue Shield Rep

The Federal Blue Cross/Blue Shield representative will be at the Marshall Center from 8:30-10:30 a.m. March 28 in Bldg. 4200, room 306.Wednesday, March 28th, Bldg 4200/Rm. 306 from 8:30 a.m. to 10:30 p.m. to assist employees with claims and questions.

Clubs and Meetings

Shuttle Buddies

The Shuttle Buddies will meet for breakfast at 9 a.m. March 26 at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757 or Gail Wynn at 852-8189.

Waltz, polka lessons

Waltz and polka dance lessons will be on from 7-8 p.m. Mondays through March 26 at Saint Stephens Episcopal Church on Whitesburg Drive, second building north of Lily Flagg Road. If you have any questions, call Woody Bombara at 650-0200.

NASA Exchange

NASA goes to the Stars

The NASA Exchange and the Customer and the Employee Relations Directorate are sponsoring "NASA Goes to the Stars" buyout baseball game with the Huntsville Stars vs. the West Tennessee Diamond Jaxx on April 13. Kenneth Cockrell, commander of Shuttle mission STS-98, will throw out the first ball at 7:05 p.m. Tickets will be available from administrative officers beginning March 26. Each ticket admits four people.

Training

Space propulsion workshop

The annual Advanced Space Propulsion Workshop will be held April 3-5 at the University of Alabama in Huntsville. To register, forward Marshall Form 1265 to CD20/Linda Law. Note on your request if you plan to attend the dinner session on April 4. For more information, visit the Web at: http://www.uah.edu/research/PRC/ASPW/

Ames to host AMS

The 35th Aerospace Mechanisms Symposium (AMS), sponsored by the Mechanisms Education Association, will be hosted by Ames Research Center, May 9-11. Thirty papers will be presented with the emphasis on hardware developments, and authors are encouraged to discuss anomalies that have occurred during design and development of mechanisms and thus help avoid similar problems in the future. Specific topics of discussion include release and deployment mechanisms, space lubricants and bearings, actuators, instrument mechanisms and various other space vehicle and ground based mechanisms. For more information, call Marshall representatives Carl Foster at 544-7167 or Martha Milton at 544-1662; Ed Boesiger at (408) 743-2377 or Ron Mancini at (650) 604-6319 or visit the Web at: http://www.aeromechanisms.com/

Sports

MARS Fishing Club results

These are the results from the March 17 Elk River tournament: first place — Billy Gonterman and Alex Rawleigh with five fish weighing 9.7 lbs.; second place — Charles Cothran and Rick Phillips with five fish weighing 9.3 lbs.; third place — Charles Nola and Dennis Strickland with five fish weighing 9.24 lbs. Big Fish honors went to Rick Phillips with a 2.98-lb. largemouth. The next tournament is April 7 at Guntersville (Waterfront Grocery Area).
For information, call Don McQueen at 544-9073, Charles Nola at 544-6367 or John Pea at 544-8437.

Earth Day logo contest winner

The winner in the 2001 Earth Day logo contest is Scott Henley of Computer Sciences Corp.

Employee Ads

Miscellaneous

★ Black dinette set, table & 4-bamboo wicker chairs, $80 obo. 534-3393 after 6 p.m.
★ Solid oak daybed w/twin mattress, $125. 420-2906
★ Bunn coffeemaker, white w/stainless, $80. 837-6776
★ Martin gas space heater, 70K BTU, free standing, $25. 534-4968
★ 1993 Harley Davidson Sportster, XLH 883, 14K miles, many extras, $7,500 obo. 882-9053
★ Homelite gas-powered weed trimmer, 2-years old, straight shaft, $40. 830-4304
★ Three windows, vinyl-insulated; 2 – 44-3/8x47, 1 – 47-1/8x43-1/4, $120 for all. 881-5842
★ Queen Anne cherry table, approx. 48"x42" plus 12" leaf, not solid wood, $150. 325-6000
★ MTD tiller, 5HP, rear tine, $450; Uniden satellite receiver, w/accessories, $75. 256-586-7424
★ Temporary electric service pole for construction use. 259-1834
★ Mobile home in Auburn, 1993 Fleetwood, 14x60, 2-bdrm, l bath, large deck, central heat/air, $10,000 obo. 461-7154
★ 1999 Honda Shadow ACE Deluxe motorcycle, 7,800 miles, black/chrome, extras, $5,000. 355-1353
★ Pickett slide rule/manual, $20; glass surface coffee table, 2-side tables, $60; AS encyclopedia, $50. 722-9483
★ Solid wood entertainment center, cherry/maple color, doors cover TV and shelves, fits 27", $300. 603-3790
★ TYCO electric race tracks, multiple tracks and power packs, 13 cars and more, $30. 461-8369
★ Two women's and one men's bike, 26", $25 each. 461-7947
★ 1997 Champion bass boat, 181SC, 150HP Mariner motor, many extras, $10,500. 776-4624
★ Pool/Air Hockey/Ping Pong table (3 in 1), children's, size approx. 4-1/2 x 2-1/2, $25. 461-8369
★ Go-Cart, single seat, 5HP, full rollcage, built by Carter, $290. 837-1405
★ Kenmore clothes dryer, $60. 534-4968
★ John Grisham's new book, "A Painted House," signed first edition, $50. 773-7730
★ Dinette set; table, four cushioned chairs, $85. 533-2287
★ RCA Satellite system, $135; Router, Craftsman 1-1/2hp, $50; Remote Control Car, battery packs, $75. 430-0400
★ Schwinn Worldsport 10-speed with Trek bike helmet and tire pump. Spoke wrench included. $85. 830-1060
★ Mobile home, 12 X 65, ramp & small porch. Partly furnished, $3,500. Grant area. 256-582-5157/5411
★ Singer Magic Press 4 ironer, like new, $75. 971-1437
★ Tiller, front tine, 5hp B & S engine, $165; Heavy-duty treadmill, $125. 881-6040

Vehicles

★ 1991 Toyota Corolla 4DR DX, auto, air, AM/FM cassette, 93K, $4,000 obo. 539-9491
★ 1995 Cadillac Deville, champagne, $14K obo, must sell. 353-6358/386-7231
★ 1994 Nissan Quest XE, 79K miles, power doors, windows, tilt, cruise, luggage rack, $7,000. 828-2853/508-7124
★ 1999 Chevy Tahoe LT, 2WD, tailgate, rear air, leather, 17K miles, $26,500. 852-0799/653-6603
★ 1986 Nissan 200SX, sunroof, 5-speed, many new parts, needs work, $600 obo. 256-586-7297
★ 1992 Dodge Grand Caravan LE, 104K miles, $3,000 obo. 881-6388
★ 1978 Ford Thunderbird, one-owner, 90K miles, $2,500. 539-6247
★ 1996 Blazer LT, leather, CD, 2/4WD, $10,500; 1995 Ranger Kingcab XLT, 5-speed, 4-cyl., $5,000. 880-9025
★ 1997 Chevrolet Cheyenne 1500, extended cab, V-8, auto, short bed, 2WD, 120K miles, $8,250 firm. 256-753-2278
★ 1993 Dodge Grand Caravan SE, one-owner, many new parts, service records available, $5,100 obo. 895-9520
★ 1981 Datsun ZX, original owner, low mileage, $5,000. 461-8181
★ 1996 Jeep Grand Cherokee Limited, dark green, auto, V-8, sunroof, 85k miles, $14,300. 883-7621
★ EZ-GO Turf Maintenance Truck, 18 HP Gas, Dump bed, perfect for farm or estate, $1350. 837-1405
★ 1974 Ford Bronco, early classic, 302 V-8, 3sp, power steering, new tires, $4850. 837-1405
★ 1990 Suzuki GS500E 2 cyl. street motorcycle, red w/white wheels, 8k miles, $1750. 508-8117 or 880-5287
★ 32" 5th wheel Carri-Lite, self-contained, entertainment center, storage cover, microwave, full bath, $11,500. 859-4833

Found

★ Umbrella, Bldg. 4200. Call 544-4758 to claim/identify

Free

★ Cat, female, spayed, vaccinated, good w/children, indoor/outdoor, doesn't like other cats. 461-7411
★ Six Bantam chickens, orange roosters, black hens, must go together. 776-9684
★ Seven railroad cross ties, you haul. 837-6776

Wanted

★ Qualified individual to appraise stamp collection. 881-0755
★ Used flute in good condition. 828-5840

Thank you

Dear Marshall Family,
Thank you so much for the prayers, phone calls, cards and most of all your support during my recent hospitalization.
Sincerely, Dawn Christian,
SD01

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